

Portland Propane Export Terminal Project

June 8, 2015

*Pembina recently ran a series of advertisements to share information about our project - you can view them **here**. (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/Portland-Ads_1.pdf)*

May 7, 2015

*The Port of Portland has issued a news release in support of our project. You can read it **here**. (http://www.portofportland.com/Notices*

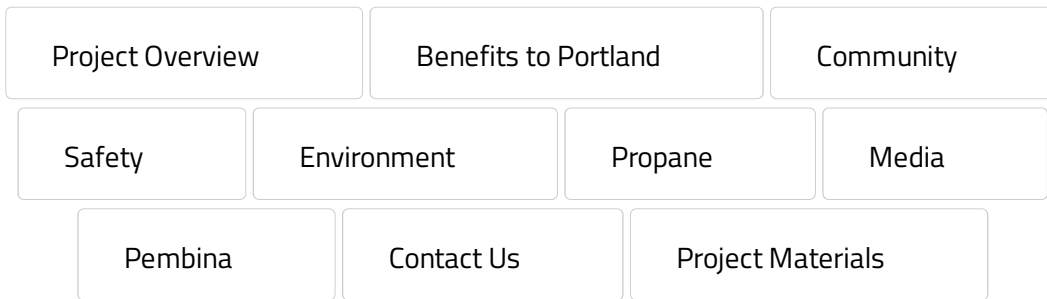
WOP-Pembina_01_BLT.htm)

May 5, 2015

*Take a look at Pembina's Quantitative Risk Assessment Technical Workshop summary video **here**.*

(/propaneterminal/qra-video/)

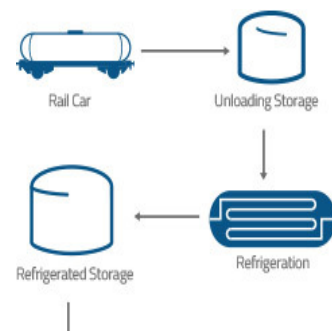
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Project Overview

Pembina Marine Terminals Inc. ("Pembina"), a subsidiary of Pembina Pipeline Corporation ("PPC"), entered into an agreement in late August, 2014, with the Port of Portland (see news release here (<http://www.pembina.com/media-centre/news-releases/news-details/?nid=135242>)). Pembina is



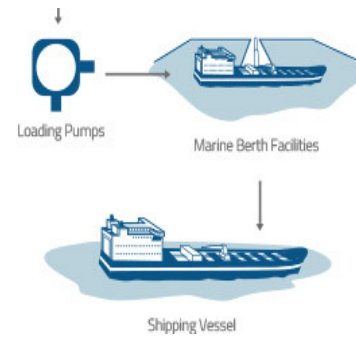
proposing to construct and operate a propane terminal facility and marine terminal for the export of propane (the "Project"). The expected capital investment is approximately \$500 million (U.S.).

The Terminal Agreement enabled Pembina to begin engaging with a broad range of stakeholders including neighborhoods, environmental organizations, regulatory agencies, business and trade associations and municipal, state and federal governments.

Pembina is proposing to build a rail-served, marine export terminal for the purpose of exporting liquid propane to global markets. The design of the facility would accommodate an average capacity of 37,500 barrels (1.6 million gallons) of liquid propane per day. One train would arrive every second day with propane from Pembina's Redwater Facility in Alberta. The liquid propane would be unloaded, chilled and stored for an average of 15 days in steel, double-walled, above-ground storage tanks capable of holding 800,000 barrels (33.6 million gallons), before being loaded to an ocean going ship via above-ground facility piping at the existing Berth 607. Pembina estimates there to be two-to-three such ships per month.

The Project is being designed for a minimum of 25 years of service, with the expectation that it will run beyond that time period. The proposed in-service date, subject to regulatory and environmental permit approvals, is scheduled for Q1 2018. The cost of the project, which would be the single largest private investment in Portland's history, is approximately \$500 million (U.S.).

Propane is the only commodity to be shipped from this site. The site will not accommodate handling and shipment of crude oil or liquefied natural gas.



Proposed Site Details

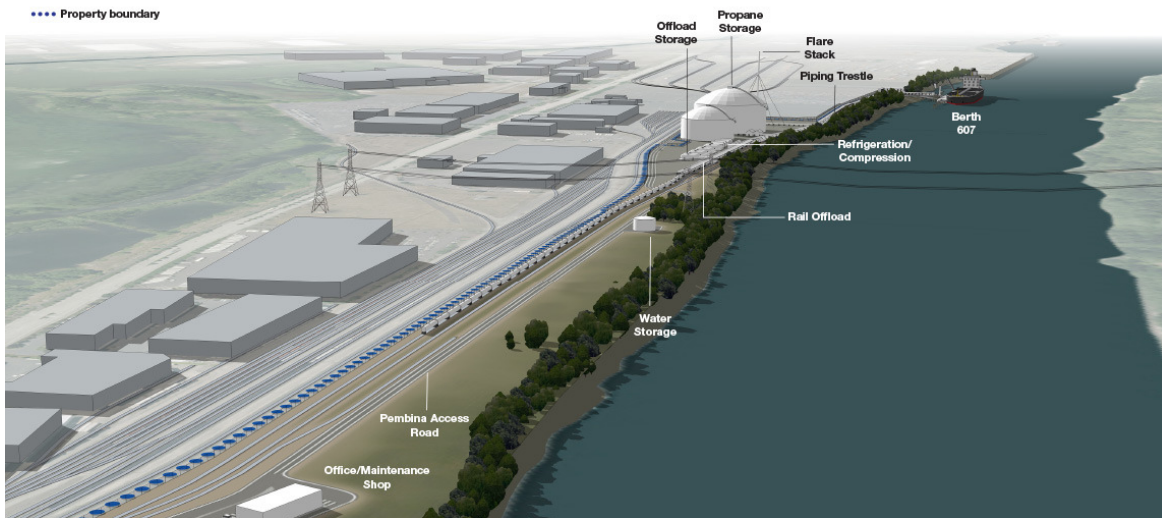


Schedule

Future Expansions

Project Need

Pembina Portland Propane Export Terminal Project



Benefits to Portland

Construction and operation of the proposed Project will result in significant benefits to the surrounding communities including:

- **Job Creation:** The Pembina propane export facility in Portland will generate between 600-800 good-paying construction jobs and up to 40 permanent full-time positions valued at \$7.2 million (U.S.) annually including benefits.

100%

Project is funded 100% by Pembina, with no taxpayer or city subsidies being requested.

The permanent positions at the facility will have salaries ranging from \$70,000 to \$120,000 (U.S.), with full benefits, and will include highly skilled positions, such as controllers, who will oversee the integrity of facility's operations around the clock, everyday.

Pembina has signed a letter of understanding with the Columbia Pacific Building and Construction Trades Council to use union labor to build the Portland facility. Portland's skilled workforce, with its commitment to safety, is one reason Pembina chose Portland for this facility. We anticipate that many of the men and women who will build this Project, or who are apprentices on the Project, will be from North Portland.

- **Procurement Opportunities:** Local businesses will have the opportunity to provide services in a range of areas related to the construction of the Project. Construction costs for the facility are estimated to be \$500 million (U.S.) and half of that amount is expected to be spent locally for labor, supplies and services, which will support local business and job-creation.

Pembina is committed to working with local small businesses, including those owned and operated by minorities and women.

- **Economic Benefits:** The Project will generate significant economic development opportunities in the region. Once in operation, the facility is estimated to generate approximately \$12 million (U.S.) in annual property tax revenue including an estimated \$3.3 million to the City of Portland, \$2.4 million to Multnomah County and \$3.1 million to Portland Public Schools annually.
- **Project is funded 100% by Pembina:** Investment in this Project, the Port and the community of Portland will be solely funded by Pembina and no taxpayer, or city subsidies, are necessary to ensure its success.

Community Engagement

At Pembina, building long-term relationships based on mutual trust with communities is a top priority. Part of building that trust is making sure regional issues are understood in order to anticipate and manage the social impacts of a proposed project, and eventual area operations, on local communities. Over the years, this strategy has served Pembina well; helping to develop a reputation for honesty, transparency and treating our stakeholders with respect.

Before a project begins, Pembina is in the field consulting with local communities and tribal groups, landowners and other stakeholders affected by the proposed development. The Company's goal is to learn about their needs and expectations, and to address potential concerns. Rather than presenting what the company is going to build, Pembina works with stakeholders beforehand to develop a project that can be built. Effective consultation requires two-way communication and Pembina employs a number of communication tools to support our stakeholder engagement.

Pembina initiated outreach immediately after announcing an agreement with the Port of Portland had been signed. Pembina plans to be a full, participating member of the Portland community and has already joined the Portland Business Alliance.

Since early September, Pembina has met, or been in dialogue, with:

Community Associations

- Hayden Island Neighborhood Network (HiNoon)
- St John's Community Association
- North Portland Chairs Network
- Friends of Cathedral Park

Tribal Communities

- Grande Ronde
- Columbia Intertribal Fish Commission
- Yakama Nation

Environmental Organizations

- Audubon Society of Portland
- Lower Columbia River Estuary Partnership

Good Neighbor Agreement



Community Advisory Committee



Community Investment



Safety

Our Safety, Environment & Security ("SES") management system is the cornerstone of Pembina's success and is deeply embedded in our corporate culture. We reinforce our commitment to excellence in SES in our daily operations through the development of stringent standards, regular safety meetings, extensive contractor screening, rigorous project inspection, review of potential hazards, and ensuring our operations meet or exceed industry best practices.

The long-term safety and reliability of infrastructure is central to Pembina's success. A strict focus on safe and reliable operations both lessens the likelihood of incidents and associated expenses, while reducing costs and sustaining our license to operate.

Facility Safety

Pembina is cognizant of the risks and hazards at its facilities during construction and into long-term operations. Safety measures and state-of-the-art equipment for our proposed facility will include:

- Steel, double-walled refrigerated tanks (i.e. a tank within a tank, with monitoring of the space in-between)
- Gas and fire detection equipment
- Automatic and remote controlled shut-off valves
- Automated monitoring and control systems
- Emergency backup generator for safe shutdown and terminal management if power is lost
- On-site and site-wide fire water tank and pump system
- Pressure and flare system designed to reduce pressure by half within 15 minutes
- 24 hours/day staffed control room
- 24 hours/day on-site operators



Facility Safety Features Infographic

To understand how these safety features work to keep our facility and the public safe, please view our Safety Features Infographic here. ([/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/Facility-Safety-Features-Infographic.pdf](#))

Dry-break decouplers at rail unload rack and ship loading systems to allow for a quick disconnect

- Automatic deluge system on rail rack in the unlikely event of an incident
- Security Management Plan incorporating security practices of the Port of Portland
- Construction by local, qualified union workers, to all federal and state codes and standards
- Inspection by third-party experts prior to facility commissioning

Seismic Standards

Our facility will be designed to meet and exceed the most recent seismic standards of the 2012 International Building Code and the 2014 Oregon Structural Specialty Code. Consequently, the facility will be built as an "essential facility," as defined in the Oregon Revised Statutes - similar to hospitals, schools and fire halls. This means that post earthquake, the structures would still support gravity load, damage that does occur will not prevent egress for occupants, and the tanks will retain containment capability.

The storage tanks and piping are designed to remain in place during a major earthquake. The tanks will sit atop 160-foot deep, 24-to-36-inch diameter pilings to provide a solid mass, which exceeds Oregon's updated seismic building code standards. Just below the storage tanks and the piping that runs to the shipping berth, we will build an underground support wall, approximately 120-feet wide, 100-feet deep and 3,000-feet long to prevent the site from potentially sloughing into the river. The safety systems within Pembina's propane facility will be designed to be operational after a seismic event.

Zero by Choice Safety Culture



Emergency Response Plan

Security Management

Pembina's Rail Fleet 11-gauge jacketed shell / 0.618" thick normalized steel

Rail Safety

Pembina has distributed propane by rail for the past 15 years to every corner of Oregon safely and we plan to continue that domestic propane service.

In 2014, Pembina shipped:

- Over 7.5 million gallons of propane (via 246 pressurized DOT 112 rail cars) to Oregon, of which
- Over 3 million gallons were safely delivered to Portland (via 102 pressurized DOT 112 rail cars)

Pembina's Rail Fleet Quick Facts

- Fleet of over 1,200 DOT 112 pressure rail cars
- Average age of cars is six (6) years and fleet is continuously upgraded
-

DOT 112 pressure rail cars include the following safety features:

- 11-gauge jacketed shell
- 0.618-inch thick, normalized steel shell
- 0.5-inch thick, full head shields and equipped with top-fitting protection
- 0.5-inch ceramic fiber insulation (thermal protection)

Pembina's tank car fleet is 100% leased – covering both manufacturer repair and maintenance services

- Complies with all current regulatory standards in the United States and Canada

Rail Business and Fleet Details



Awards Recognition



Environmental Management

We understand that we have a responsibility to minimize our environmental footprint at our proposed Portland facility. Pembina employs an Environmental Management System to minimize and manage the impact our projects and operations have on the natural environment.

Click here (<http://www.pembina.com/our-responsibility/environment/>) for more information on Pembina's Environmental Management System.

We will design and operate this facility responsibly. We will minimize environmental impacts, mitigate impacts that do occur and listen to and act on residents' concerns.

Potential impacts of the Project have been minimized by:

- The selection of this site, as: it is already developed ; is zoned for heavy industrial use; has an existing berth; is more than a mile from the nearest residential area and leverages existing infrastructure.

The permitting process includes potential impacts to

- Air quality
- Water quality
- Endangered species
- Shallow water habitat
- Riparian impacts
- Floodplain
- Wildlife habitat, and
- Safety and security risks.

- With the exception of the pipe trestle to the berth, additional impacts to the riparian habitat are not expected.
- Greenhouse gas emissions will be limited as the facility will operate in a closed-loop system and will be powered by renewable electricity.
- All propane processing is done in Canada. There will be no propane processing on site.

Pembina is conducting environmental studies and work to ensure the facility is constructed and operated in a safe, sustainable manner.

Site Impact Mitigation



Greenhouse Gas Emissions



Low Emission Engines



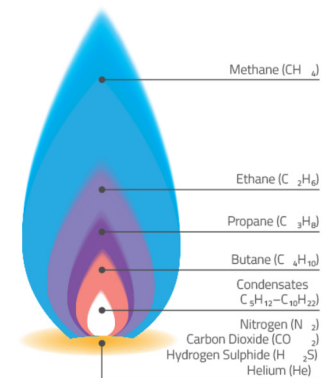
Propane

Propane is a safe energy by-product of natural gas processing and the third lightest component in the natural gas stream after methane and ethane. At normal, room temperature and atmospheric pressure, propane is a gas, but changes to a liquid when cooled or moderately pressurized.

Propane is liquefied to make storage and transportation easier, more efficient and ultimately, safer. It is stored and transported in its compressed liquid form, but by opening a valve to release propane from a pressurized storage container, it is vaporized into a gas for use.

Components Of Raw Natural Gas

Components Of Raw Natural Gas



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Information

Propane is versatile and competitive with alternative fuels. It is used for residential cooking, space and water heating, as well as in agricultural applications including crop drying and frost protection. It is used in the manufacturing of plastics, and it is a proven engine autofuel, often for fleet vehicles such as taxis, buses and forklifts.

The propane Pembina intends to ship is from produced natural gas gathered in the Western Canadian Sedimentary Basin (WCSB) – it does not come from the oil sands deposits in northeastern Alberta.

Bentek Webinar

Click here (<https://mman.webex.com/mman/ldr.php?RCID=e5635d19f59f3b472d2f39e>) to view Bentek's Webinar on how propane is displacing higher carbon-emitting fuels in the Asia Pacific region.

Safety



Environmental Benefits



North American Market and Supply Concerns



Media Center

Welcome to the Media Center. Whether you're a member of the press, or just interested in the latest news from Pembina, you'll find everything you need here.

Recent Media Coverage

Colleagues should clean up Charlie Hales' Pembina mess: Editorial Agenda 2015
The Oregonian, May 19,

Propane exporter seeks day in court
Portland Tribune, May 18, 2015
[Read Full Story](#)

Our Opinion: Mayor should rethink Pembina decision
Portland Tribune, May 14, 2015
[Read Full Story](#)

2015

Read Full Story

(http://www.oregonlive.com

/opinion/index.ssf/2015/05

/colleagues_should_clean_up_daytime_court-)

(http://cni.pmgnews.com

/pt/9-

news/260797-132835-

propane-exporter-seeks-

daytime_court-)

(http://portlandtribune.com

/pt/10-opinion

/260180-131758-

our-opinion-mayor-should-

rethink-pembina-decision)

Click Here to access the news archive (/propaneterminal/news-archive/)



About Pembina

Pembina is a leading energy transportation and midstream service provider, serving North America for over 60 years. Our strategically located and integrated energy infrastructure enables us to offer essential services for the energy industry across the hydrocarbon value chain. As a trusted member of the communities in which we operate, we are committed to safe, responsible and reliable operations and to generating value for our investors.

1954 – company was founded

1997 – became a publically traded company

- 1000+ employees
- \$15 billion – enterprise value (approx.)
- Listed on the NYSE under PBA
- Head office in Calgary, Alberta, Canada

2010 – converted from an income trust to a corporation
 2012 – acquired Provident Energy and became listed on the NYSE
 2014 – listed as one of Alberta's Top 65 Employer

Project Team

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Contact Us

Pembina values your input. If you have questions, comments or want additional information please contact us at:

Pembina's Toll-Free Project Line: 1-888-920-1979

Project Email: propaneterminal@pembina.com

(<mailto:propaneterminal@pembina.com>)

Procurement Opportunities: PortlandSCM@pembina.com

(<mailto:PortlandSCM@pembina.com>)

Project Materials

Documents Available for Download

- Pembina Propane Terminal Overview Brochure (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Media%20Centre/Pembina-Propane-Terminal-Overview-Brochure.pdf)
- Pembina Propane Terminal Project Information Package (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Media%20Centre/Pembina-Propane-Terminal-Project-Information-Package.pdf)
- Pembina Safety/QRA Presentation (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/PSC-March-17-Powerpoint-FINAL.pdf)
- Bentek Propane Market Report (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/PNW-LPG-v15.pdf)

News Releases

- Pembina Pipeline Corporation Reaffirms Plans to Progress its Proposed Portland Propane Terminal News Release, May.7,2015
[Read Full Story \(/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/News-Release-Pembina-Pipeline.pdf\)](#)
- Pembina and The Port of Portland Announced a \$3 Million Fund for a Community Investment Program in Portland News Release, Mar.24,2015
[Read Full Story \(/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Media%20Centre/News%20Release/NR-Pembina-and-Port-CI-fund-Final.pdf\)](#)
- Pembina Marine Terminals Makes Significant Project Commitments News Release, Jan. 13, 2015
[Read Full Story \(https://stage.pembina.com/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Media%20Centre/News%20Release/News-Release-Pembina-Community-Commitments-Jan-13-Final.pdf\)](#)
- News Release – Pembina Marine Terminal to Engage the Community in a Joint Committee News Release, Jan. 5, 2015

Links

- Port of Portland – Projects Page (http://www.portofportland.com/Prj_Prpsd_Prpne_Trmnl.aspx)
- Propane Education Research Council (<http://www.propanecouncil.org/>)
- National Propane Association (<http://www.npga.org/i4a/pages/index.cfm?pageid=1>)
- Canadian Propane Association (<http://www.propane.ca/en>)

Videos

- Quantitative Risk Assessment(QRA) Workshop – March 10, 2015 (/propaneterminal/qra-video/)

- Proposed Terminal
Advertisements
(/Pembina/media
/Pembina
/Portland%20Propane%20Terminal%20Project
/Media%20Centre
/Portland%20Propane%20Terminal%20Project
/News%20Release/NR-Portland-
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/Portland-Ads_1.pdf)

Read Full Story
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/Portland%20Propane%20Terminal%20Project
/News%20Release/NR-Portland-
/Documents%20Available%20for%20Download
/Fact%20Sheets%20Secured FINAL.pdf)

Pembina Chooses Portland,
Oregon for New West Coast
Propane Export Terminal
News Release, Sep. 2, 2015
Read Full Story

Fact Sheets

- Project Overview
(/Pembina/media
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/News%20Release/NR-Portland-
/Documents%20Available%20for%20Download
/Fact%20Sheets%20Secured
/Project-Overview.pdf)
- Project Benefits
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/Documents%20Available%20for%20Download
/May%202015%20Updated%20Fact%20Sheets
/Project-Benefits.pdf)
- Corporate Safety
(/Pembina/media
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/Documents%20Available%20for%20Download
/May%202015%20Updated%20Fact%20Sheets
/Corporate-Safety.pdf)
- Community Engagement
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/Community-
Engagement.pdf)
- Tribal Consultation
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/Project-Overview.pdf)

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/May%202015%20Updated%20Fact%20Sheets
/Tribal-Consultation.pdf)

- Community
Commitments (/Pembina
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/May%202015%20Updated%20Fact%20Sheets
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Commitments.pdf)
- Rail Safety (/Pembina
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/May%202015%20Updated%20Fact%20Sheets
/Rail-Safety.pdf)
- Facility Safety (/Pembina
/media/Pembina
/Portland%20Propane%20Terminal%20Project
/Documents%20Available%20for%20Download
/May%202015%20Updated%20Fact%20Sheets
/Facility-Safety.pdf)
- Quantitative Risk
Assessment Summary
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/May%202015%20Updated%20Fact%20Sheets
/Quantitative-
Risk-Assessment-
Summary.pdf)
- Environmental
Management (/Pembina
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/Portland%20Propane%20Terminal%20Project
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/Fact%20Sheets%20Secured
/Environmental-

Management.pdf)

- Propane as Transition Fuel (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/May%202015%20Updated%20Fact%20Sheets/Propane-Bridge-Fuel.pdf)
- About Propane (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/Propane.pdf)
- Permits Required (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/Permits-Required-FINAL.pdf)
- What They Say (/Pembina/media/Pembina/Portland%20Propane%20Terminal%20Project/Documents%20Available%20for%20Download/Fact%20Sheets%20Secured/What-They-Say.pdf)